ST-JX311/JX411

SERVICE MANUAL

US Model
Canadian Model
E Model
Australian Model

Photo: ST-JX411

ST-JX311: This set is the tuner section in SEN-311.

SPECIFICATIONS

FM tuner section

Tuning range	87.5 – 108 MHz
Antenna terminals	75 ohms unbalanced 300 ohms balanced
Intermediate frequency	10.7 MHz
Sensitivity (at 50 dB quieting)	22.1 dBf, 7 μV (mono), 42.1 dBf, 70 μV (stereo)
Usable sensitivity	19.5 dBf, 5 μV (IHF)
Signal-to-noise ratio (at 75 kHz deviation)	80 dB (mono), 75 dB (stereo)
Harmonic distortion	0.3% (mono), 0.5% (stereo) at 1 kHz
Separation	40 dB at 1 kHz
Frequency response	30 Hz – 15 kHz $^{+0.5}_{-2.0}$ dB
Selectivity	55 dB at 400 kHz
AM suppression ratio	54 dB
Image response ratio	50 dB
IF response ratio	90 dB
Spurious response ratio	70 dB
Automatic tuning threshold	17.8 μV (30 dBf)
Output	775 mV, 4.7 kohms (at 75 kHz deviation)

AM tuner section

Tuning range	US, Canadian model: 530—1,710 kHz (10 kHz) 531—1,710 kHz (9 kHz) E, Australian model: 531—1,602 kHz
Antenna	AM loop antenna, External antenna terminal
Intermediate frequency	450 kHz
Usable sensitivity	AM loop antenna: 500 μV/m (999 kHz or 1,000 kHz)
Signal-to-noise ratio	54 dB
Harmonic distortion	0.5%
Selectivity	35 dB (9 kHz) 38 dB (10 kHz)

General

Power requirements	US, Canadian model: 120 V AC, 60 Hz E, Australian model: 240 V AC, 50 Hz
Power consumption	8W (ST-JX411)
AC outlet (U.S.A. model only)	1 unswitched, 120W/1 A max.
Dimensions	Approx. 430 x 80 x 295 mm (w/h/d) (17 x $3^1/_4$ x $11^5/_8$ inches)
Weight	ST-JX311: Approx. 2.1 kg (4 lb 11 oz) ST-JX411: Approx. 2.6 kg (5 lb 12 oz)
Accessories supplied	
ST-JX311:	Flat cord with 11-5-5-pin connectors (1), connected to TC-W311. Flat cord with 9-9-pin connectors (1) Remote commander RM-S102 (1) Sony batteries SUM 3 (NS) (2)
ST-JX411:	Remote control cord (1) Audio connecting cord (1) AM loop antenna (1) FM loop antenna (1)

Design and specifications subject to change without notice.

FM STEREO/FM-AM TUNER

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

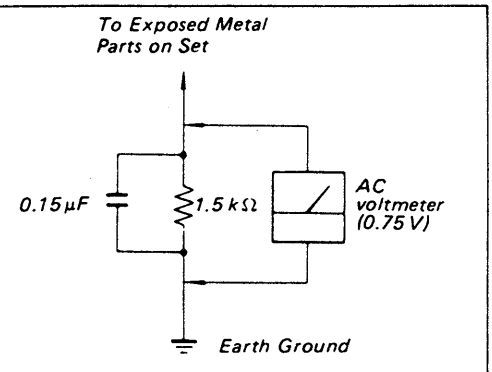

Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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To change the AM tuning interval

The AM tuning interval is preset at the factory to 10 kHz to match the frequency allocation system of your country. To change the interval to 9 kHz, proceed as follows.

1 Depress the POWER switch to turn on the unit.
2 Set the BAND FM/AM selector to AM.
3 Press the POWER switch to turn off the unit.
4 Hold the TUNING knob in the "+" position, and depress the POWER switch to turn on the unit. To reset the interval to 10 kHz, follow the same procedure.

Note

When the interval is changed, all preset stations which you have memorized using the numeric buttons will be erased from the memory. After changing the interval, be sure to preset the stations again.

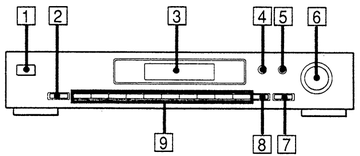
ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1
GENERAL

This section is extracted from instruction manual.

1-1. LOCATION OF CONTROLS



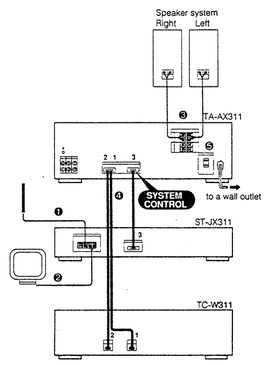
1 POWER switch (ST-JX411 only)
2 SHIFT button
3 Display window
4 MEMORY SCAN button
5 AUTO TUNING button
6 TUNING control
7 BAND FM/AM selector
8 MEMORY button
9 Numeric buttons

1-2. CONNECTION

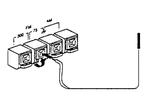
- Connect the AC power cord last. Make sure power is off.
- Cord plugs and jacks are color coded. Red plugs and jacks are for right channel (R) and white ones for the left channel (L).
- The cable connectors should be fully inserted into the jacks. A loose connection may cause hum and noise.
- Keep speaker cords, connecting cords and power cords away from the AM loop antenna and the tuner's antenna lead-in to avoid possible noise pickup.

CAUTION
Do not put anything like another unit to obstruct the ventilation holes on the top of the amplifier.
The level surface installation is required for essential air ventilation to prevent internal heat built up in the amplifier.

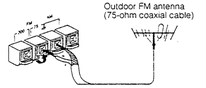
ST-JX311 Model



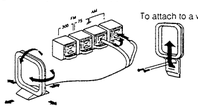
❶ FM wire antenna (supplied)



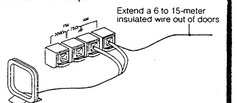
For better FM reception



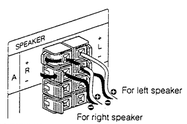
❷ AM loop antenna (supplied)



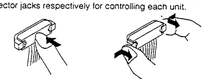
For better AM reception



❸ Speaker cords
You can connect two pairs of speaker systems: system A and system B.
They can be selected individually or simultaneously with the selector on the front panel.

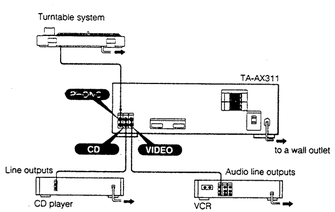


❹ Flat remote control cord (supplied)
Connect the blue and black connectors to the same color connector jacks respectively for controlling each unit.



❺ AC OUTLET
Use this to power an audio component whose power consumption is less than the wattage indicated on the AC OUTLET.
This outlet is controlled by the power switch on the amplifier.

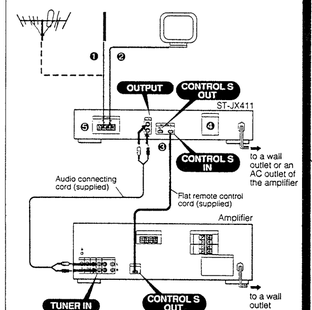
Adding Other Components to Your System



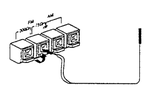
CAUTION
Do not connect any electical home appliances such as an iron, fan, TV or other high wattage equipment to the AC OUTLET.

Note
The supplied flat cords for tape deck are already connected to the TC-W311.

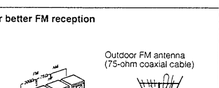
ST-JX411 Model



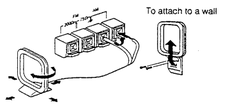
❶ FM wire antenna (supplied)



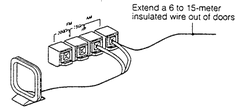
For better FM reception



❷ AM loop antenna (supplied)



For better AM reception



❸ Flat remote control cord (supplied)
IN: Connect to the CONTROL S OUT connector of the Sony amplifier for whole audio system remote control.
OUT: Connect to the CONTROL S IN connector of other Sony equipment with the 4-pin flat remote control cord for whole audio system remote control.

❹ AC OUTLET (U.S.A. model only)
Use this to power an audio component whose power consumption is less than the wattage indicated on the AC OUTLET.
This outlet is controlled by the power switch on the amplifier.

CAUTION
Do not connect any electical home appliances such as an iron, fan, TV or other high wattage equipment to the AC OUTLET.

❺ Antenna Ground
To prevent hum, connect the ground wire to ANTENNA ground terminal (⏚). When an outdoor antenna is installed, be sure to connect the ground wire for lightning protection.

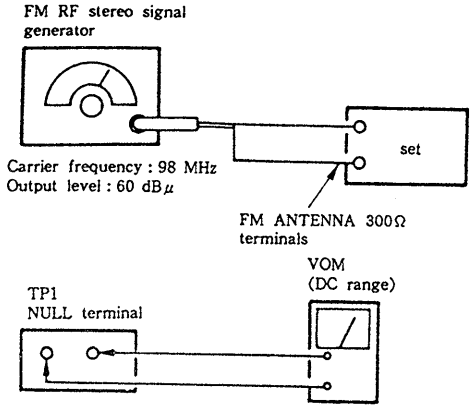
Note to CATV system indstaller
This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

SECTION 2
ELECTRICAL ADJUSTMENTS

FM SECTION

• FM Discriminator Alignment (NULL check)

Setting :



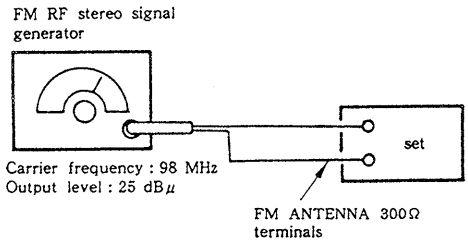
Procedure :

1. Tune the set to 98 MHz.
2. Adjust T21 for 0 V reading on the VOM.

Note : FM TUNING LEVEL adjustment should be macle after FM discriminator alignment.

• FM TUNING LEVEL Adjustment

Setting :

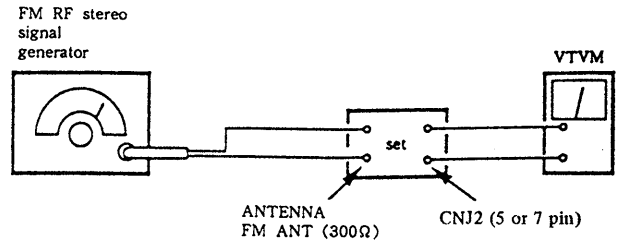


Procedure :

1. Tune the set to 98 MHz.
2. Adjust RV24 so that the TUNED LED goes on.

• FM Stereo Separation Adjustment

Setting :



Carrier frequency : 98 MHz
Output level : 60 dBμ

Procedure :

Tune the set to 98 MHz.

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	(A)
R-CH	L-CH	(B) Adjust RV21 for minimum reading.
R-CH	R-CH	(C)
L-CH	R-CH	(D) Adjust RV21 for minimum reading.

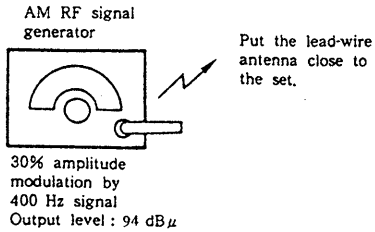
L-CH Stereo separation : (A) − (B)
R-CH Stereo separation : (C) − (D)

The separations of both channels should be equal.

AM SECTION

• AM Tuned Indication Lighting Level Adjustment

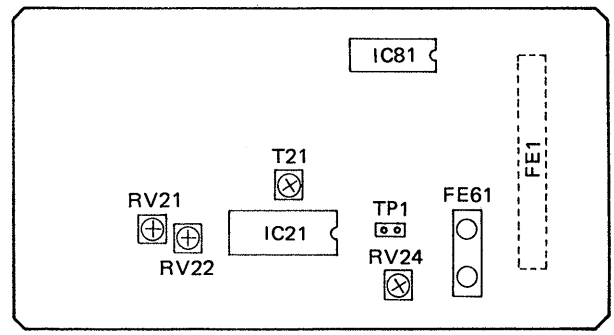
Setting :


AM RF signal generator
Put the lead-wire antenna close to the set.
30% amplitude modulation by 400 Hz signal
Output level : 94 dBμ

Procedure :

1. Tune the set to 1,050 kHz (US, CANADIAN), 999 kHz (E, AUS).
2. Adjust RV22 so that the TUNED LED goes on.

—TUNER BOARD— (Component side)



SECTION 3
DIAGRAMS

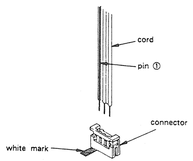
3-1. PRINTED WIRING BOARDS

Note:

- ○—— : parts extracted from the component side.
- ⊡ indicates side identified with part number.
- ▒▒▒ : Pattern on the side which is seen.

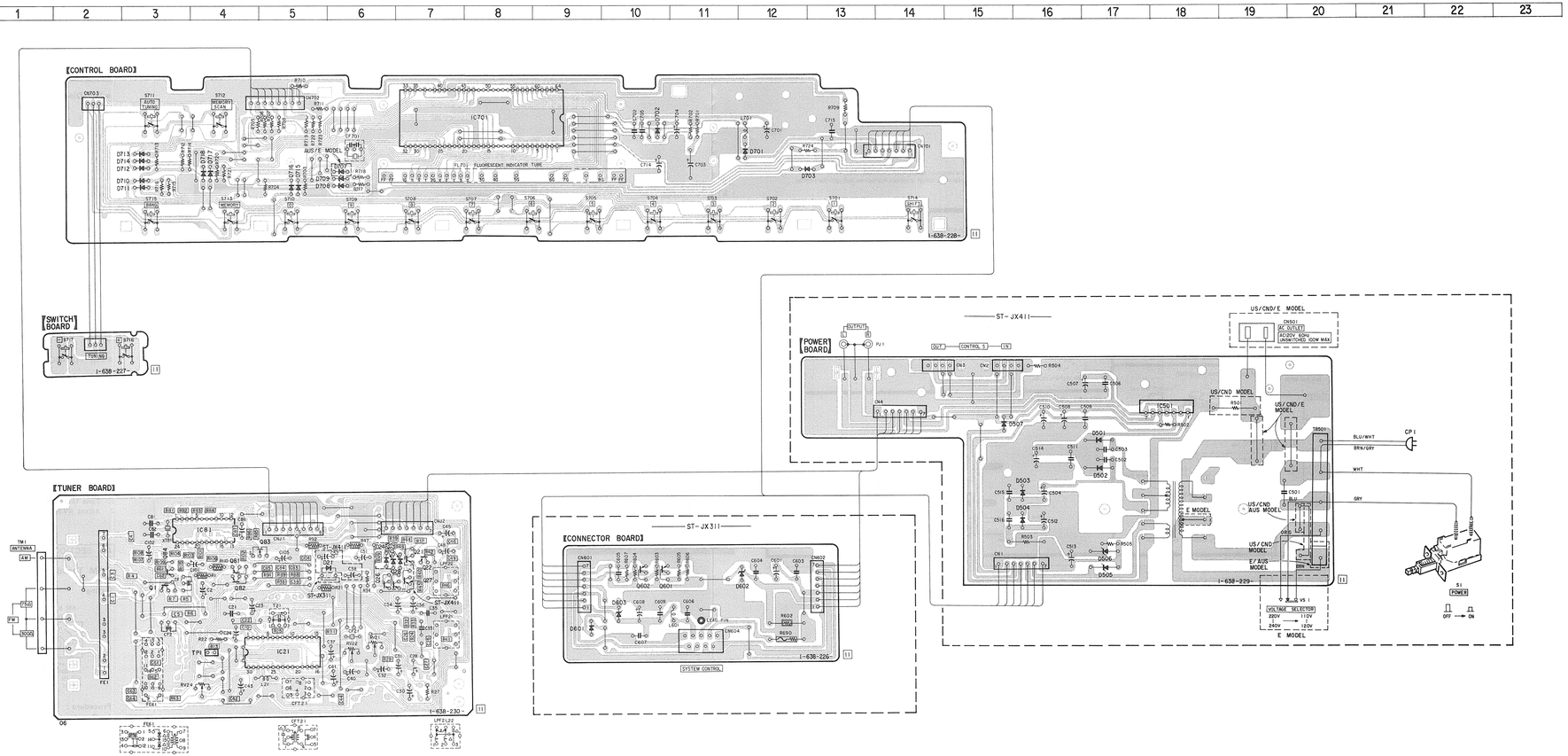
[Note on Inserting the Cord to the Connector on Tuner Board]

- Insert the cord to the connector fitting Pin ① of the cord in accordance with the white mark on the board at the connector as shown in the figure.



- **Semiconductor Location**

Ref.No.	Location	Ref.No.	Location
D21	H-5	D714	C-3
D22	H-6	D715	C-5
D23	H-6	D716	C-5
D24	H-6	D717	B-4
D501	G-17	D718	B-4
D502	G-17		
D503	G-16	IC21	J-5
D504	H-16	IC81	H-4
D505	I-17	IC501	F-18
D506	H-17	IC701	B-8
D507	F-16		
D601	I-9	Q1	I-3
D602	I-12	Q21	H-7
D603	I-10	Q22	H-7
D701	B-12	Q26	I-6
D702	B-10	Q27	I-7
D703	C-13	Q28	H-6
D707	C-6	Q81	H-4
D708	C-5	Q82	I-4
D709	C-5	Q83	H-5
D710	C-3	Q84	H-3
D711	C-3	Q601	I-10
D712	C-3	Q602	I-10
D713	B-3		



3-2. SCHEMATIC DIAGRAM —Tuner Section—

【TUNER BOARD】

TM1 ANTENNA
FM 300Ω 75Ω
AM

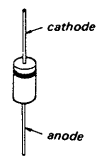
FE1
Q1 2SC2669OY FM IF AMP
IC21 AM RF/OSC/MIX/IF BUFFER FM IF/DET
IC21 LA1851N
IC81 PLL
IC81 LC7218
XT81 7.2MHZ
FE61
T21
TP1
NULL
STEREO SEPARATION
FM TUNED
AM TUNED
B+
Q21, 22 BUFFER
Q27, 28 SWITCHING
Q81, 82 FM B+ SWITCHING
Q81 2SA1348
Q82 2SC3402
Q83 2SK246 GR3
Q84 2SC3113A
Q21 2SC2603
Q22 2SC2603
Q24 2SC3402 MUTING
Q26 2SC2603
Q27 2SC2603
Q28 2SC2603
D21 1N4118M
D22 1N4148M
D24 1N4148M
D23 1N4148M
LPF22
LPF21
ST-JX411
ST-JX311

*	ST-JX411		ST-JX311	
	U/CA	AU/E	U/CA	AU/E
R22	8.2K	22K	8.2K	22K
C33, 35	8200P	6800P	8200P	6800P
R34	4.7K	4.7K	47K	47K
R1	220	220	180	180

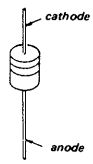
CNJ1: CE, DI, CL, DO (PLL), GND, TUNED, STEREO, MUTING → TO CONTROL BOARD CN702
CNJ2: GND, 5V, 13V, MUTING, L CH, GND, R CH → TO CONNECTOR BOARD CN602 (ST-JX311); TO POWER BOARD CN4 (ST-JX411)

3-3. SEMICONDUCTOR LEAD LAYOUTS

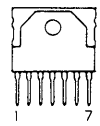
EQA02-06C
1N4148M
10E2N



HZS6A3L
RD30ESB3

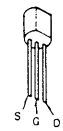


LA5667

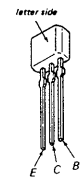


DTC114ES
2SC2603-EF
2SC3113-AB
2SC2669-OY

2SK246GR3



2SC2785-HFE



Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- : nonflammable resistor.
- : fusible resistor.

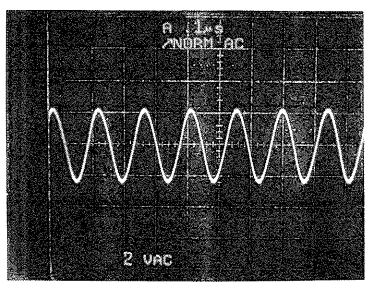
Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- B+ : B+ line.
- B− : B− line.
- : adjustment for repair.

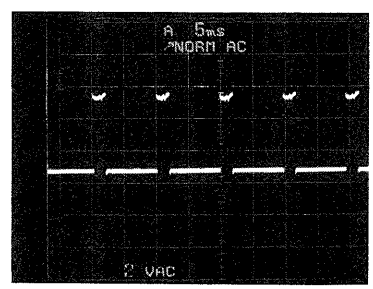
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- no mark : FM
- Voltages are taken with a VOM. (Input impedance 10MΩ) Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM

3-4. WAVEFORMS

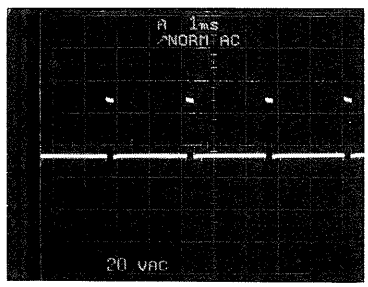
①



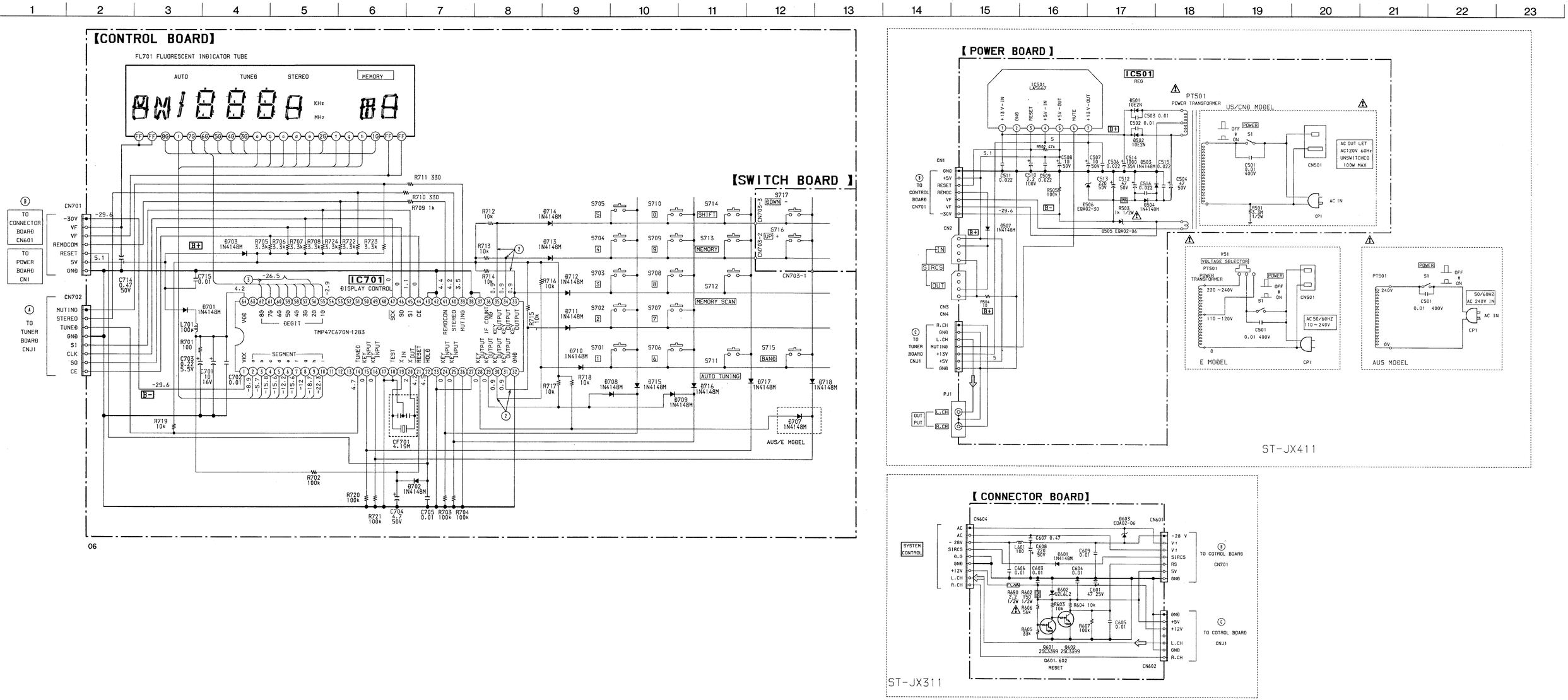
②



③



3-5. SCHEMATIC DIAGRAM —Control and Power Section— ● Refer to page 13 for note.



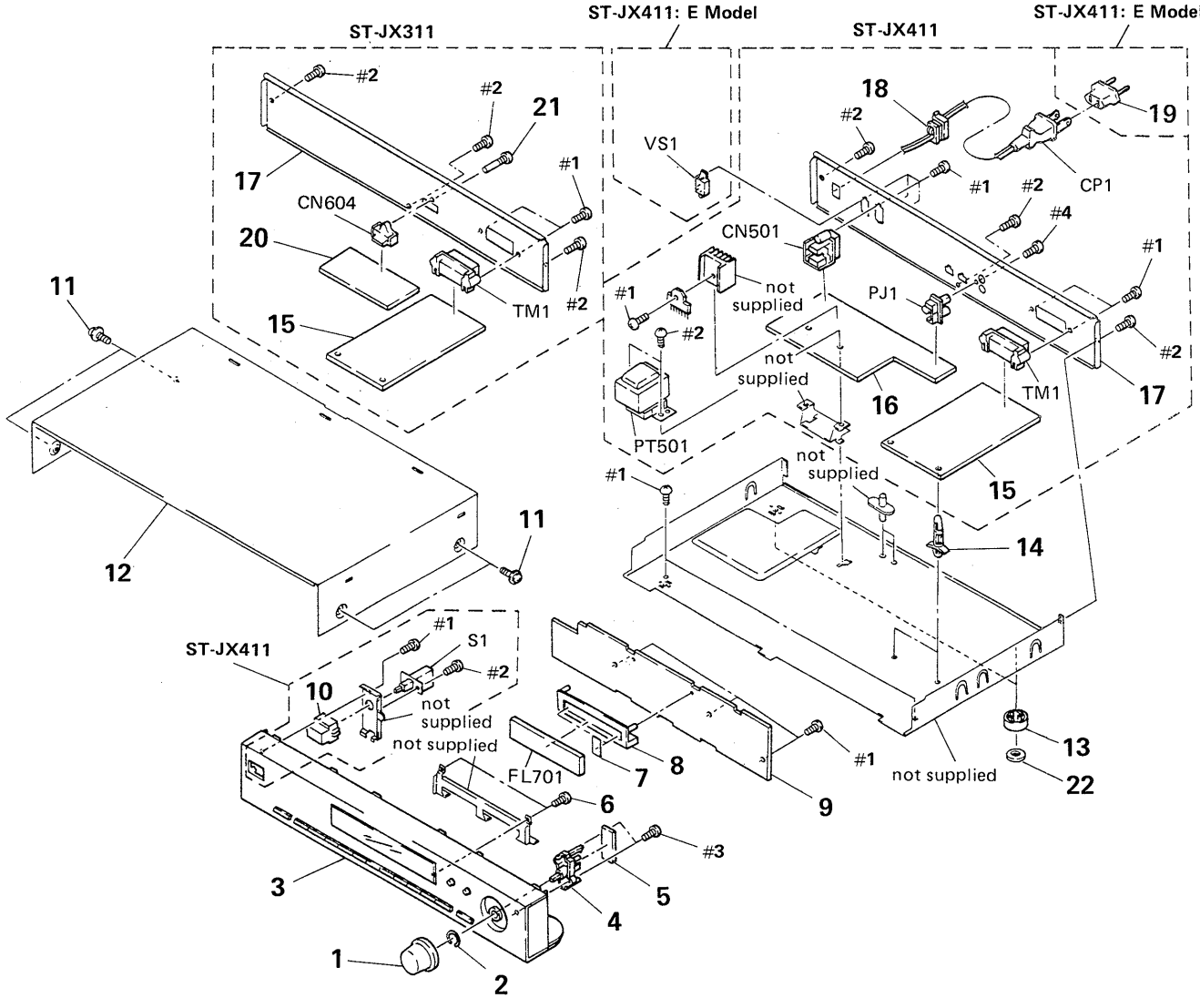
SECTION 4
EXPLODED VIEW

NOTE:

- –XX, –X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts color ↑ Cabinet's color
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifé.

- Abbreviation
  AUS: Australian



Ref. No.	Part No.	Description	Remark
1	4-943-466-01	KNOB (TUNING)	
2	4-946-017-01	SPRING, RING	
3	A-4323-885-A	PANEL ASSY, FRONT (JX311:US, Canadian)	
3	A-4323-886-A	PANEL ASSY, FRONT (JX311:E, AUS)	
3	A-4323-888-A	PANEL ASSY, FRONT (JX411:US)	
3	A-4323-889-A	PANEL ASSY, FRONT (JX411:E, AUS)	
3	A-4325-040-A	PANEL ASSY, FRONT (JX411:Canadian)	
4	X-4905-269-1	SHAFT ASSY, TUNING	
6	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
9	A-4341-787-A	CONTROL BOARD, COMPLETE (JX411:US)	
9	A-4341-788-A	CONTROL BOARD, COMPLETE (JX411:Canadian)	
9	A-4341-789-A	CONTROL BOARD, COMPLETE (JX411:E)	
9	* A-4341-790-A	CONTROL BOARD, COMPLETE (JX411:AUS)	
10	4-917-460-41	KNOB, POWER (JX411)	
11	3-704-366-01	SCREW (CASE) (M3X8)	
12	4-923-457-01	CASE	
13	3-318-688-51	FOOT (F58175S) (JX411:Canadian)	
13	X-4941-228-1	FOOT ASSY (JX411:US, E, AUS)	
14	* 3-346-265-11	HOLDER, PC BOARD	
15	* A-4341-783-A	TUNER BOARD, COMPLETE (JX311:US, Canadian)	
15	* A-4341-793-A	TUNER BOARD, COMPLETE (JX311:E, AUS)	
15	* A-4341-794-A	TUNER BOARD, COMPLETE (JX411:US, Canadian)	
15	* A-4341-795-A	TUNER BOARD, COMPLETE (JX411:E, AUS)	
16	* 1-638-229-11	POWER BOARD (JX411)	
17	* 4-943-471-01	PANEL, BACK (JX411:US, Canadian)	
17	* 4-943-471-11	PANEL, BACK (JX411:E)	
17	* 4-943-471-21	PANEL, BACK (JX411:AUS)	
17	* 4-943-472-01	PANEL, BACK (JX311:US, Canadian, AUS)	
17	* 4-943-472-11	PANEL, BACK (JX311:E)	

Ref. No.	Part No.	Description	Remark
18	* 3-703-244-00	BUSHING (2104), CORD (JX411:AUS)	
18	* 3-703-571-11	BUSHING (S) (4516), CORD (JX411:US, Canadian, E)	
19	1-569-007-11	ADAPTER, CONVERSION 2P (JX411:E)	
20	*1-638-226-11	CONNECTOR BOARD (JX311)	
21	3-704-242-01	SCREW, TERMINAL, + BVTP CLAW (JX311)	
22	4-923-836-21	CUSHION (JX411: Canadian)	
CN501	⚠1-540-057-11	OUTLET, AC (POLAR) (AC OUTLET) (JX411:US, Canadian)	
CN501	⚠1-540-038-11	OUTLET, AC (NONPOLAR) (1P) (JX411:E)	
CN604	1-565-949-11	SOCKET, CONNECTOR 9P (JX311:US, Canadian, E, AUS)	
CP1	⚠1-551-188-XX	CORD, POWER (JX411:E)	
CP1	⚠1-558-945-11	CORD, POWER (JX411:US, Canadian)	
CP1	⚠1-559-912-11	CORD, POWER (JX411:AUS)	
FL701	1-519-512-11	INDICATOR TUBE, FLUORESCENT	
PJ1	* 1-580-691-11	JACK, PIN 2P (JX411)	
PT501	⚠1-450-386-11	TRANSFORMER, POWER (JX411:AUS, E)	
PT501	⚠1-450-387-11	TRANSFORMER, POWER (JX411:US, Canadian)	
S1	⚠1-572-267-21	SWITCH, PUSH (AC POWER) (1 KEY) (JX411)	
TM1	* 1-537-264-11	TERMINAL BOARD	
VS1	⚠1-570-046-21	SWITCH, VOLTAGE CHANGE (JX411:E)	

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- –XX, –X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF: μF
- COILS
  uH: μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

- Abbreviation
  AUS: Australian

Ref. No.	Part No.	Description			Remark
	A-4341-787-A	CONTROL BOARD, COMPLETE (JX311:US, Canadian/JX411:US)			
	A-4341-788-A	CONTROL BOARD, COMPLETE (JX411:Canadian)			
	A-4341-789-A	CONTROL BOARD, COMPLETE (JX311:E, AUS/JX411:E)			
	* A-4341-790-A	CONTROL BOARD, COMPLETE (JX411:AUS)			
		**********			
	1-638-227-11	SWITCH BOARD			
	* 1-638-226-11	CONNECTOR BOARD (JX311)			
	* 4-921-941-01	CUSHION (FL)			
	* 4-942-301-01	HOLDER, FL TUBE			
		< CAPACITOR >			
C601	1-124-477-11	ELECT	47uF	20% 25V	(JX311)
C603	1-101-004-00	CERAMIC	0.01uF	50V	(JX311)
C604	1-101-004-00	CERAMIC	0.01uF	50V	(JX311)
C605	1-101-004-00	CERAMIC	0.01uF	50V	(JX311)
C606	1-101-004-00	CERAMIC	0.01uF	50V	(JX311)
C607	1-136-173-00	FILM	0.47uF	5% 50V	(JX311)
C608	1-124-911-11	ELECT	220uF	20% 50V	(JX311)
C609	1-101-004-00	CERAMIC	0.01uF	50V	(JX311)
C701	1-126-157-11	ELECT	10uF	20% 16V	
C702	1-161-379-00	CERAMIC	0.01uF	20% 25V	
C703	1-125-486-11	DUBLE LAYERS	0.22F	5.5V	
C704	1-126-163-11	ELECT	4.7uF	20% 50V	
C705	1-161-379-00	CERAMIC	0.01uF	20% 25V	
C714	1-124-465-00	ELECT	0.47uF	20% 50V	
C715	1-161-379-00	CERAMIC	0.01uF	20% 25V	
		< VIBRATOR >			
CF701	1-577-101-11	VIBRATOR, CERAMIC			

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
CN601	1-580-956-11	SOCKET, CONNECTOR 7P (JX311)	
CN602	1-580-956-11	SOCKET, CONNECTOR 7P (JX311)	
CN604	1-565-949-11	SOCKET, CONNECTOR 9P (SYSTEM CONTROL) (JX311)	
CN701	1-580-956-11	SOCKET, CONNECTOR 7P	
CN702	1-580-957-11	SOCKET, CONNECTOR 8P	
CN703	* 1-568-952-11	PIN, CONNECTOR 3P	
		< DIODE >	
D601	8-719-987-63	DIODE 1N4148M (JX311)	
D602	8-719-933-35	DIODE HZS6A3L (JX311)	
D603	8-719-912-81	DIODE EQA02-06C	
D701	8-719-987-63	DIODE 1N4148M	
D702	8-719-987-63	DIODE 1N4148M	
D703	8-719-987-63	DIODE 1N4148M	
D707	8-719-987-63	DIODE 1N4148M (JX311:E, AUS/JX411:E, AUS)	
D708	8-719-987-63	DIODE 1N4148M	
D709	8-719-987-63	DIODE 1N4148M	
D710	8-719-987-63	DIODE 1N4148M	
D711	8-719-987-63	DIODE 1N4148M	
D712	8-719-987-63	DIODE 1N4148M	
D713	8-719-987-63	DIODE 1N4148M	
D714	8-719-987-63	DIODE 1N4148M	
D715	8-719-987-63	DIODE 1N4148M	
D716	8-719-987-63	DIODE 1N4148M	
D717	8-719-987-63	DIODE 1N4148M	
D718	8-719-987-63	DIODE 1N4148M	
		< FLUORESCENT INDICATOR >	
FL701	1-519-512-11	INDICATOR TUBE, FLUORESCENT	

CONTROL | SWITCH | CONNECTOR | POWER

Ref.No.	Part No.	Description				Remark
		< IC >				
IC701	8-759-234-35	IC TMP47C670N-1283				
		< COIL >				
L601	1-410-521-11	INDUCTOR	100uH			(JX311)
L701	1-410-521-11	INDUCTOR	100uH			
		< TRANSISTOR >				
Q601	8-729-900-89	TRANSISTOR DTC144ES				(JX311)
Q602	⚠ 8-729-900-89	TRANSISTOR DTC144ES				(JX311)
		< RESISTOR >				
R602	1-247-741-11	CARBON	150	5%	1/2W F	(JX311)
R603	1-249-429-11	CARBON	10K	5%	1/4W	(JX311)
R604	1-249-429-11	CARBON	10K	5%	1/4W	(JX311)
R605	1-249-435-11	CARBON	33K	5%	1/4W	(JX311)
R606	1-249-438-11	CARBON	56K	5%	1/4W	(JX311)
R607	1-249-441-11	CARBON	100K	5%	1/4W	(JX311)
R690	1-212-942-00	FUSIBLE	2.2	5%	1/2W F	(JX311)
R701	1-249-405-11	CARBON	100	5%	1/4W	
R702	1-249-441-11	CARBON	100K	5%	1/4W	
R703	1-249-441-11	CARBON	100K	5%	1/4W	
R704	1-249-441-11	CARBON	100K	5%	1/4W	
R705	1-249-423-11	CARBON	3.3K	5%	1/4W	
R706	1-249-423-11	CARBON	3.3K	5%	1/4W	
R707	1-249-423-11	CARBON	3.3K	5%	1/4W	
R708	1-249-423-11	CARBON	3.3K	5%	1/4W	
R709	1-249-417-11	CARBON	1K	5%	1/4W	
R710	1-249-411-11	CARBON	330	5%	1/4W	
R711	1-249-411-11	CARBON	330	5%	1/4W	
R712	1-249-429-11	CARBON	10K	5%	1/4W	
R713	1-249-429-11	CARBON	10K	5%	1/4W	
R714	1-249-429-11	CARBON	10K	5%	1/4W	
R715	1-249-429-11	CARBON	10K	5%	1/4W	
R716	1-249-429-11	CARBON	10K	5%	1/4W	
R717	1-249-429-11	CARBON	10K	5%	1/4W	
R718	1-249-429-11	CARBON	10K	5%	1/4W	
R719	1-249-429-11	CARBON	10K	5%	1/4W	
R720	1-249-441-11	CARBON	100K	5%	1/4W	
R721	1-249-441-11	CARBON	100K	5%	1/4W	
R722	1-249-423-11	CARBON	3.3K	5%	1/4W	
R723	1-249-423-11	CARBON	3.3K	5%	1/4W	
R724	1-249-423-11	CARBON	3.3K	5%	1/4W	
		< SWITCH >				
S701	1-554-303-21	SWITCH, TACTILE	(1)			
S702	1-554-303-21	SWITCH, TACTILE	(2)			
S703	1-554-303-21	SWITCH, TACTILE	(3)			
S704	1-554-303-21	SWITCH, TACTILE	(4)			
S705	1-554-303-21	SWITCH, TACTILE	(5)			
S706	1-554-303-21	SWITCH, TACTILE	(6)			
S707	1-554-303-21	SWITCH, TACTILE	(7)			
S708	1-554-303-21	SWITCH, TACTILE	(8)			
S709	1-554-303-21	SWITCH, TACTILE	(9)			
S710	1-554-303-21	SWITCH, TACTILE	(0)			
S711	1-554-303-21	SWITCH, TACTILE	(AUTO TUNING)			
S712	1-554-303-21	SWITCH, TACTILE	(MEMORY SCAN)			
S713	1-554-303-21	SWITCH, TACTILE	(MEMORY)			
S714	1-554-303-21	SWITCH, TACTILE	(SHIFT)			
S715	1-554-303-21	SWITCH, TACTILE	(BAND)			
S716	1-554-303-21	SWITCH, TACTILE	(TUNING +)			
S717	1-554-303-21	SWITCH, TACTILE	(TUNING -)			

****

*	1-638-229-11	POWER BOARD				(JX411)
		**********				
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S				
		< CAPACITOR >				
C501	1-161-744-00	CERAMIC	0.01uF			400V
C502	1-101-004-00	CERAMIC	0.01uF			50V
C503	1-101-004-00	CERAMIC	0.01uF			50V
C504	1-124-910-11	ELECT	47uF	20%		50V
C506	1-101-005-00	CERAMIC	22000PF			50V
C507	1-124-907-11	ELECT	10uF	20%		50V
C508	1-124-907-11	ELECT	10uF	20%		50V
C509	1-101-005-00	CERAMIC	22000PF			50V
C510	1-124-925-11	ELECT	2.2uF	20%		100V
C511	1-101-005-00	CERAMIC	22000PF			50V
C512	1-124-910-11	ELECT	47uF	20%		50V
C513	1-124-911-11	ELECT	220uF	20%		50V
C514	1-126-105-11	ELECT	1000uF	20%		35V
C515	1-101-005-00	CERAMIC	22000PF			50V
C516	1-101-005-00	CERAMIC	22000PF			50V
		< CONNECTOR >				
CN1	1-580-956-11	SOCKET, CONNECTOR 7P				(JX411)
CN2	1-564-980-11	PIN, CONNECTOR 4P				(CONTROL S IN)
CN3	1-564-980-11	PIN, CONNECTOR 4P				(CONTROL S OUT)
CN4	1-580-956-11	SOCKET, CONNECTOR 7P				
CN501	⚠1-540-057-11	OUTLET, AC (POLAR)				(AC OUTLET) (JX411:US, Canadian)
CN501	⚠1-540-038-11	OUTLET, AC (NONPOLAR)				(1P) (JX411:E)

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D501	8-719-200-77	DIODE 10E2N	
D502	8-719-200-77	DIODE 10E2N	
D503	8-719-987-63	DIODE 1N4148M	
D504	8-719-987-63	DIODE 1N4148M	
D505	8-719-912-81	DIODE EQA02-06C	
D506	8-719-110-73	DIODE RD30ESB3	
D507	8-719-987-63	DIODE 1N4148M	
		< IC >	
IC501	8-759-820-09	IC LA5667	
		< JACK PIN >	
PJ1	* 1-580-691-11	JACK, PIN 2P	
		< TRANSFORMER >	
PT501	⚠ 1-450-386-11	TRANSFORMER, POWER (JX411:E, AUS)	
PT501	⚠ 1-450-387-11	TRANSFORMER, POWER (JX411:US, Canadian)	
		< RESISTOR >	
R501	1-202-725-00	SOLID 3.3M 10% 1/2W (JX411:US, Canadian)	
R502	1-249-437-11	CARBON 47K 5% 1/4W	
R503	⚠ 1-247-752-11	CARBON 1K 5% 1/2W F	
R504	1-249-393-11	CARBON 10 5% 1/4W	
R505	1-249-441-11	CARBON 100K 5% 1/4W	
		< BASE POST >	
TB501	* 1-535-141-00	BASE POST 22MM (10MM PITCH) 4P (JX411:US, Canadian)	
		**********	
	* A-4341-783-A	TUNER BOARD, COMPLETE (JX311:US, Canadian)	
	* A-4341-793-A	TUNER BOARD, COMPLETE (JX311:E, AUS)	
	* A-4341-794-A	TUNER BOARD, COMPLETE (JX411:US, Canadian)	
	* A-4341-795-A	TUNER BOARD, COMPLETE (JX411:E, AUS)	
		**********	
		< CAPACITOR >	
C1	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C2	1-124-477-11	ELECT 47uF 20% 25V	
C3	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C4	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C5	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C10	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C21	1-161-021-11	CERAMIC 0.047uF 10% 25V	
C22	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C23	1-124-477-11	ELECT 47uF 20% 25V	
C24	1-123-382-00	ELECT 3.3uF 20% 100V	
C25	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C26	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
C27	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C28	1-124-903-11	ELECT 1uF 20% 50V	
C30	1-124-903-11	ELECT 1uF 20% 50V	
C31	1-124-902-00	ELECT 0.47uF 20% 50V	
C32	1-124-463-00	ELECT 0.1uF 20% 50V	
C33	1-130-482-00	MYLAR 0.0082uF 5% 50V (JX311:US, Canadian/JX411:US, Canadian)	
C33	1-130-481-00	MYLAR 0.0068uF 5% 50V (JX311:E, AUS/JX411:E, AUS)	
C34	1-123-382-00	ELECT 3.3uF 20% 100V	
C35	1-130-482-00	MYLAR 0.0082uF 5% 50V (JX311:US, Canadian/JX411:US, Canadian)	
C35	1-130-481-00	MYLAR 0.0068uF 5% 50V (JX311:E, AUS/JX411:E, AUS)	
C36	1-123-382-00	ELECT 3.3uF 20% 100V	
C37	1-124-907-11	ELECT 10uF 20% 50V	
C38	1-124-907-11	ELECT 10uF 20% 50V (JX411)	
C39	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C40	1-124-463-00	ELECT 0.1uF 20% 50V	
C41	1-124-927-11	ELECT 4.7uF 20% 100V	
C42	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C43	1-126-176-11	ELECT 220uF 20% 10V	
C44	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C45	1-123-382-00	ELECT 3.3uF 20% 100V	
C46	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C48	1-123-382-00	ELECT 3.3uF 20% 100V	
C49	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C51	1-124-477-11	ELECT 47uF 20% 25V	
C52	1-124-252-00	ELECT 0.33uF 20% 50V (JX411)	
C61	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C62	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C63	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C64	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C81	1-102-961-00	CERAMIC 27PF 5% 50V	
C82	1-102-961-00	CERAMIC 27PF 5% 50V	
C83	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C84	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C85	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C86	1-124-477-11	ELECT 47uF 20% 25V	
C87	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C101	1-124-925-11	ELECT 2.2uF 20% 100V	
C102	1-124-463-00	ELECT 0.1uF 20% 50V	
C103	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C104	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C105	1-124-477-11	ELECT 47uF 20% 25V	

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

TUNER

Ref. No.	Part No.	Description	Remark
		< FILTER >	
CF1	1-567-389-11	FILTER, CERAMIC	
CF2	1-567-389-11	FILTER, CERAMIC	
CF21	1-577-075-11	OSCILLATOR, CERAMIC	
CFT21	1-404-853-11	TRANSFORMER, IF (CERAMIC FILTER)	
		< CONNECTOR >	
CNJ1	1-580-957-11	SOCKET, CONNECTOR 8P	
CNJ2	1-580-956-11	SOCKET, CONNECTOR 7P	
		< DIODE >	
D21	8-719-987-63	DIODE 1N4148M (JX411)	
D22	8-719-987-63	DIODE 1N4148M (JX411)	
D23	8-719-987-63	DIODE 1N4148M (JX411)	
D24	8-719-987-63	DIODE 1N4148M (JX411)	
		< FRONT END >	
FE1	1-465-006-11	FRONT END (FM) (2 GANG)	
FE61	1-236-461-11	ENCAPSULATED COMPONENT	
		< IC >	
IC21	8-759-821-45	IC LA1851N	
IC81	8-759-820-91	IC LC7218	
		< COIL >	
L21	1-410-494-11	INDUCTOR 1MMH	
		< FILTER >	
LPF21	1-235-164-00	FILTER, LOW PASS	
LPF22	1-235-164-00	FILTER, LOW PASS	
		< TRANSISTOR >	
Q1	8-729-230-XX	TRANSISTOR 2SC2669-OY	
Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q26	8-729-900-80	TRANSISTOR DTC114ES	
Q27	8-729-620-05	TRANSISTOR 2SC2603-EF (JX411)	
Q28	8-729-620-05	TRANSISTOR 2SC2603-EF (JX411)	
Q81	8-729-900-61	TRANSISTOR DTA114ES	
Q82	8-729-900-80	TRANSISTOR DTC114ES	
Q83	8-729-202-67	TRANSISTOR 2SK246-GR3	
Q84	8-729-230-93	TRANSISTOR 2SC3113-AB	
		< RESISTOR >	
R1	⚠ 1-249-409-11	CARBON 220 5% 1/4W	
R4	1-216-013-00	METAL CHIP 33 5% 1/10W	
R5	1-216-013-00	METAL CHIP 33 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R6	1-216-037-00	METAL CHIP 330 5% 1/10W	
R7	1-216-109-00	METAL CHIP 330K 5% 1/10W	
R21	⚠ 1-249-404-00	CARBON 82 5% 1/4W	
R22	1-247-535-11	CARBON 8.2K 5% 1/4W	(JX311:US, Canadian/JX411:US, Canadian)
R22	1-249-462-11	CARBON 22K 5% 1/4W	(JX311:E, AUS/JX411:E, AUS)
R23	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R24	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R25	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R27	1-247-543-11	CARBON 18K 5% 1/4W	
R29	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R31	1-216-041-00	METAL CHIP 470 5% 1/10W	
R32	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R33	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R34	1-247-553-11	CARBON 47K 5% 1/4W	(JX311)
R34	1-247-721-11	CARBON 4.7K 5% 1/4W	(JX411)
R35	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R37	1-216-109-00	METAL CHIP 330K 5% 1/10W	
R39	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R40	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R41	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R42	1-216-109-00	METAL CHIP 330K 5% 1/10W	
R44	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R45	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R46	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R47	⚠ 1-249-409-11	CARBON 220 5% 1/4W	
R48	1-216-097-00	METAL CHIP 100K 5% 1/10W	(JX411)
R49	1-216-097-00	METAL CHIP 100K 5% 1/10W	(JX411)
R61	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R62	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R63	1-216-009-00	METAL CHIP 22 5% 1/10W	
R81	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R82	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R83	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R84	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R85	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R86	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R88	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R89	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R91	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R92	⚠ 1-249-401-11	CARBON 47 5% 1/4W	

Note:
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Replace only with part number specified.

Note:
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Ne les remplacer que par une pièce portant le numéro spécifié.

TUNER

Ref. No.	Part No.	Description			Remark
R101	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R102	1-216-043-00	METAL CHIP	560	5%	1/10W
R103	1-216-049-00	METAL CHIP	1K	5%	1/10W
R104	1-216-035-00	METAL CHIP	270	5%	1/10W
R105	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R106	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R107	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R108	1-216-025-00	METAL CHIP	100	5%	1/10W
R109	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R110	⚠ 1-249-405-11	CARBON	100	5%	1/4W
		< VARIABLE RESISTOR >			
RV21	1-238-015-11	RES. ADJ. CARBON 4.7K			
RV22	1-238-017-11	RES. ADJ. CARBON 22K			
RV24	1-238-017-11	RES. ADJ. CARBON 22K			
		< TRANSFORMER >			
T21	1-404-807-11	TRANSFORMER. DISCRIMINATOR			
		< TERMINAL >			
TM1	* 1-537-264-11	TERMINAL BOARD (SPEAKER)			
		< TEST PIN >			
TP1	* 1-560-060-00	PIN. CONNECTOR 2P			
		< VIBRATOR >			
XT81	1-577-126-11	VIBRATOR. CRYSTAL			

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MISCELLANEOUS
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19	1-569-007-11	ADAPTER. CONVERSION 2P (JX411:E)
CN604	1-565-949-11	SOCKET. CONNECTOR 9P (JX311:US. Canadian. E. AUS)
CP1	⚠ 1-551-188-XX	CORD. POWER (JX411:E)
CP1	⚠ 1-558-945-11	CORD. POWER (JX411:US. Canadian)
CP1	⚠ 1-559-912-11	CORD. POWER (JX411:AUS)
S1	⚠ 1-572-267-21	SWITCH. PUSH (AC POWER) (1 KEY) (JX411)
VS1	⚠ 1-570-046-21	SWITCH. VOLTAGE CHANGE (JX411:E)

Ref. No.	Part No.	Description	Remark
		ACCESSORY & PACKING MATERIAL	
		**********	
	1-501-374-11	ANTENNA. LOOP (JX411:US. E. AUS)	
	1-558-232-11	CORD (WITH CONNECTOR) (SIRCS) 4P (JX411:US. E. AUS)	
	1-559-533-11	CORD. CONNECTION (JX411:US. E. AUS)	
	3-753-100-11	MANUAL. INSTRUCTION (JX411:E)	
	3-753-100-21	MANUAL. INSTRUCTION (JX411:US. AUS)	
*	4-941-692-01	CUSHION (JX311:US. E. AUS/JX411)	
*	4-943-621-01	INDIVIDUAL CARTON (JX411:US. AUS)	
*	4-943-621-11	INDIVIDUAL CARTON (JX411:E)	

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HARDWARE LIST

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# 1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
# 2	7-682-548-09	SCREW +BVTT 3X8 (S)
# 3	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S
# 4	7-621-849-00	SCREW. TAPPING (JX411)

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note:** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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Sony Corporation
Audio Group

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